IN THE CLAIMS

Please cancel claims 1-26 and 29 without prejudice.

Please amend the following claims which are pending in the present application:

1-26. (Cancelled)

27. (Currently amended) A down-hole or in-vessel imaging apparatus, comprising

illuminating means for emitting radiation of a specified wavelength or waveband through a medium to a target;

detector means for detecting radiation deflected by said target; [[and]]

~~amplifier means~~ a selectable wavelength or waveband system, including different amplifiers for providing different non-linear amplification of different media of output of the detector means ~~output.~~ ; and

means for selecting between said amplifiers.

28. (Currently amended) The sensor of claim 27, wherein

[[said]] one amplifier is a video amplifier with a non-linear response.

29. (Cancelled)

30. (Original) The sensor of claim 27, further comprising

means for varying a non-linear function of said output.

31. (Original) The sensor of claim 30, wherein said means for varying said non-linear function of said output is a remote control means.

32. (Original) The sensor of claim 27, further comprising

means for automatically controlling illumination power.

33. (Original) The sensor of claim 27, wherein said illumination means comprises

a single laser diode.

34. (Original) The sensor of claim 27, wherein said illumination means comprises

an array of laser diodes assembled into a module or modules installed within an image sensor housing.

35. (Original) The sensor of claim 34, further comprising

separate electrical connections to diodes or groups of diodes emitting at different wavelengths.

36. (Original) The sensor of claim 27, further comprising

stabilising or temperature control means.

37. (Original) The sensor of claim 27, wherein

said illumination means are collimated laser beams.

38. (Original) The sensor of claim 27, wherein

said illumination means comprises a broad-band source or sources.

39. (Original) The sensor of claim 27, wherein

said illumination means comprises more than one independently controllable broad-band source, each with its own wavelength restricting filter or filters.

40. (Original) The sensor of claim 27, further comprising

cylindrical spheric or aspheric lenses in front of said illuminating means.

41. (Original) The sensor of claim 27, further comprising

a common-path optic which forms an image sensor window,

wherein said common-path optic transmits the outgoing illumination radiation and the returning radiation through the same window area in contact with surrounding media.

42. (Original) The sensor of claim 41, wherein

said common-path optic comprises an assembly of more than one component.

43. (Original) The sensor of claim 41, wherein

said common-path optic provides optical power to form all or part of the image sensor focussing optics, the illuminator beam shaping optics and to correct distortion in the optical system.

44. (Original) The sensor of claim 27, further comprising

a casing;

wherein said illumination means is provided externally to said casing.

45. (Original) The sensor of claim 34, wherein

said sensor further comprises power conditioning for said laser diode array and detector,

an analogue video output, and

control electronics to adjust independently the power output of two or more laser diodes or groups of diodes.

46. (Original) The sensor of claim 45, wherein

said output power control is commanded by signals applied to the video output line, decoded within the image sensor.

47. (Original) The sensor of claim 45, wherein

signals applied to the video line are used to adjust the characteristics of the non-linear amplifier.

48. (Original) The sensor of claim 45, further comprising

internal digitisation and compression of the output signal, and a digital output, with separate command lines.

49. (Original) The image sensor of claim 27, wherein

said image sensor is arranged in a cylindrical geometry with a sideways-looking optical system.

50. (Original) The image sensor of claim 49, wherein

said sensor housing has a cylindrical profile and

said side view window is curved to match the cylindrical profile of the sensor housing.

51. (Original) The image sensor of claim 48, wherein

the sensor housing is arranged in a rectangular geometry.

52. (Original) The image sensor of claim 27, wherein

the sensor is arranged with the window at the end of the housing.